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ABSTRACT

Findings of a study that determined the ways in which practicing administrative course developers utilize instructional design activities in their design projects are presented in this paper. A survey was administered to 30 participants in a training and development group within a large organization and mailed to 43 other practicing instructional designers from a wide variety of contexts. Approximately 47 percent of the mailed surveys were returned. The results of the study were: (1) the most frequently completed design activities were writing learning objectives, developing test items, selecting instructional strategies, and selecting members; (2) the least frequently completed design activities were assessing trainee's entry skills and characteristics, and conducting a pilot test; (3) the most frequently given reasons for not including a design activity were the decision was already made, there wasn't enough time, and it was considered unnecessary; (4) lack of instructional design was seldom identified as a reason for excluding a design activity; (5) years of experience did not appear to be related to how often course developers use various instructional design activities; and (6) while virtually all participants indicated that they usually or always wrote learning objectives, only two-thirds indicated that they usually or always conducted a task analysis. A conclusion is that, in practice, instructional design activities occur on an irregular basis. An instructional development model to guide decision making in a real-life context is needed. Three figures, three tables, and a copy of the survey are included. (Contains 7 references.) (LMI)

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The Practice of Instructional Design
A Survey of What Designers Do, Don't Do and Why They Don't Do It

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Paper presented at the annunal meeting of the American Educational Research Association, San Francisco, California, 1992.

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Executive Summary

Background

For a number of years there has been a continuing debate on the degree to which instructional design models are used in practice. A preliminary study was conducted to determine if and how practicing course developers include instructional design activities (e.g., conducting needs assessment, writing learning objectives) in their design projects. A survey was distributed to 73 practicing instructional designers. They were asked to indicate how often they used eleven instructional design activities and, as appropriate, to indicate why an activity was excluded from some projects.

Findings

The results of the study can be summarized as follows:

- the most frequently completed design activities were:
  - writing learning objectives
  - developing test items
  - selecting instructional strategies
  - selecting media
- the least frequently completed design activities were:
  - assessing trainee's entry skills and characteristics
  - conducting a pilot test
- the most frequently given reasons for not including a design activity were:
  - decision already made
  - not enough time
  - considered unnecessary
- "lack (ID) expertise" was seldom identified as a reason for excluding a design activity
- years of experience did not appear to be related to how often course developers use of various instructional design activities

Executive Summary (cont.)

Findings (cont.)

Interestingly, while virtually all participants indicated that they usually or always wrote learning objectives, only two-thirds indicated that they usually or always conducted a task analysis. This finding raises questions about how learning objectives are specified.

Conclusions

While preliminary in nature, the findings provide evidence that, in practice, instructional design activities occur on an irregular basis, with some activities almost always occurring and other activities occurring perhaps half the time. This unevenness is problematic in that the typical instructional development model is based on the premise that all activities which comprise the model will be completed. Indeed, some models essentially require that certain activities be completed before other activities are undertaken. The prescriptions of such models appear to be regularly violated in practice, underscoring the need for an instructional development model which can guide decision making in a real-life context.

Additional research is needed to understand the nature of the tasks and approaches used by practicing instructional designers. The validity and reliability of the survey instrument needs to be established and used with a large sample. Additional demographic data needs to be collected and analyzed.

Indepth interviews and observational studies with instructional designers should also be conducted. Such efforts will help determine the decision-making factors and principles which drive the practice of instructional design.

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Introduction

The Problem

What do you do
When you have no time
No time to do "model" ID?
Do you skip some steps,
Or water them down,
Combine, or maybe all three?

The Practitioner's Lament
circa 1989

The Questions

The Practitioner's Lament raises several questions:

- Which steps are most likely to be skipped, combined, or diluted?
- Is time actually an obstacle in completing course development projects?
- Are there other factors which are also obstacles to implementing ID models?

This study was conducted to provide preliminary answers to these questions.

Background

Criticism of ID/D Models

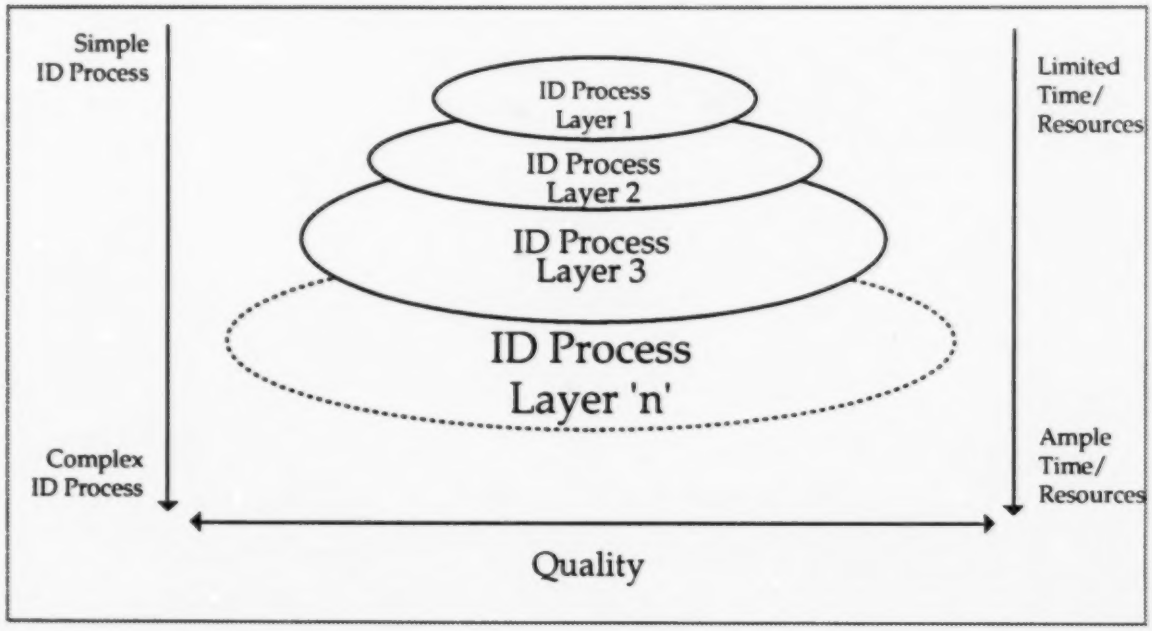
Instructional design and development (ID/D) models are used as a guide to quality instruction. However, ID/D models in general have been criticized for their complexity and lack of adaptability.

For example, Rogoff (1984) called for simpler, more pragmatic approaches than allowed for in most ID/D models. More recently, Rosenberg (1991) argued that ID/D models need to be more efficient. Rosenberg pointed out that present models ". . . lack the ability to know what to skip and what not to skip. Thus, the process takes too long and frustrates management" (p. 5).

Layers of Necessity

The Layers of Necessity Model (Tessmer & Wedman, 1990; Wedman & Tessmer, 1990) provides a flexible ID/D model that helps adapt design and development activities to project circumstances (see Figure 1).

Figure 1. Layers of Necessity Model



Background (cont.)

Layers of Necessity

In effect, the model is an attempt to integrate numerous ID/D activities, which range in terms of complexity and precision, into a single framework. The model is intended to be sensitive to the load, payoff, and pressure factors that influence decisions to include, skip, or water-down various activities within a given project (Tessmer & Wedman, 1992). A partial listing of load, payoff, and pressure factors is provided in Table 1 below.

Table 1. Sample Load, Payoff, and Pressure Factors

Load Factors	Payoff Factors	Pressure Factors
Time	Performance Impact	Norms
Money	Client Satisfaction	Tolerance
Personnel Expertise	Designer Status	Client Demand
Project Difficulty	Organizational Image	Resource Use

A combination of load, payoff, and pressure factors are hypothesized to be at work in any ID/D project. Collectively, these factors can influence the decision to conduct a given design activity and can also influence the extent to which the activity is carried out.

Consider, for example, two course development projects. One project has a very short timeline, a client who views instruction as a necessary evil, and a limited budget. The other project has ample time, a client who is dedicated to quality instruction, and an substantial budget. The first project would be a likely candidate for a streamlined ID/D approach; the second project might allow for a more sophisticated approach. Each of these are briefly discussed below.

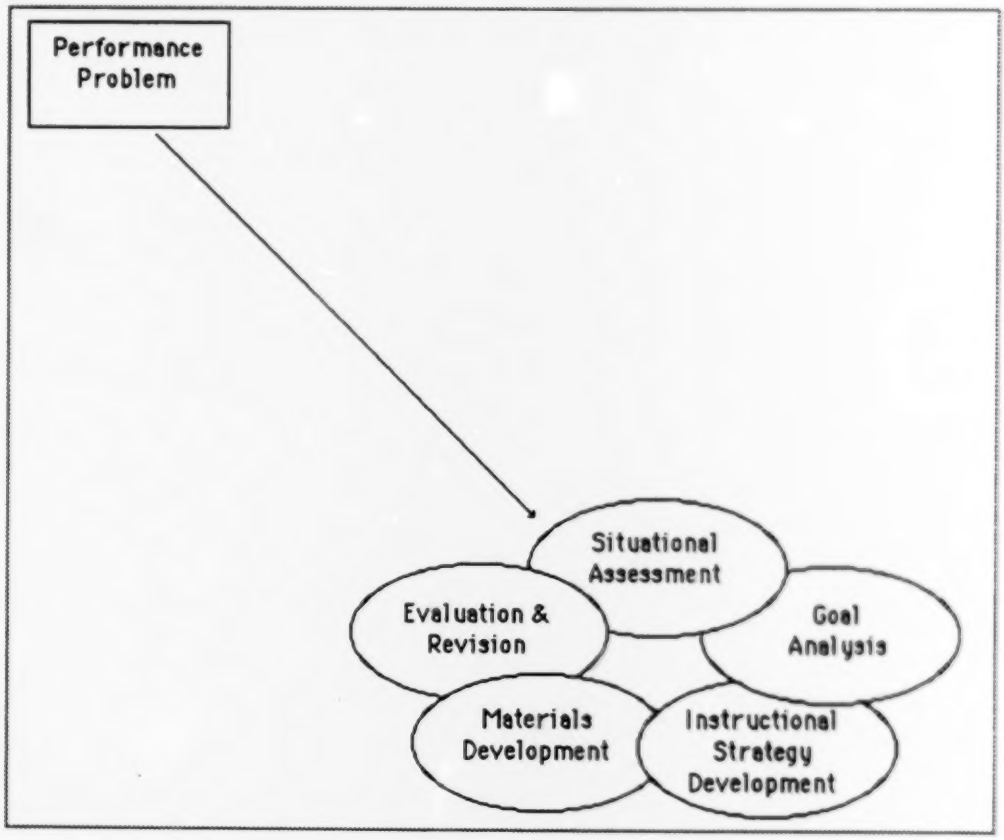
Background (cont.)

The first project calls for a simple layer of ID/D activities (see Figure 2). None of the activities would be carried out in detail, and careful attention would be given to limit the time and resource consumption of the activities. For example, the "situational assessment" activity might be limited to answering the following questions:

- What performance improvement is required?
- Will instruction improve performance?
- Who will be receive the instruction?
- What are the resource and time constraints?

Similar limitations would be placed on the other ID/D activities.

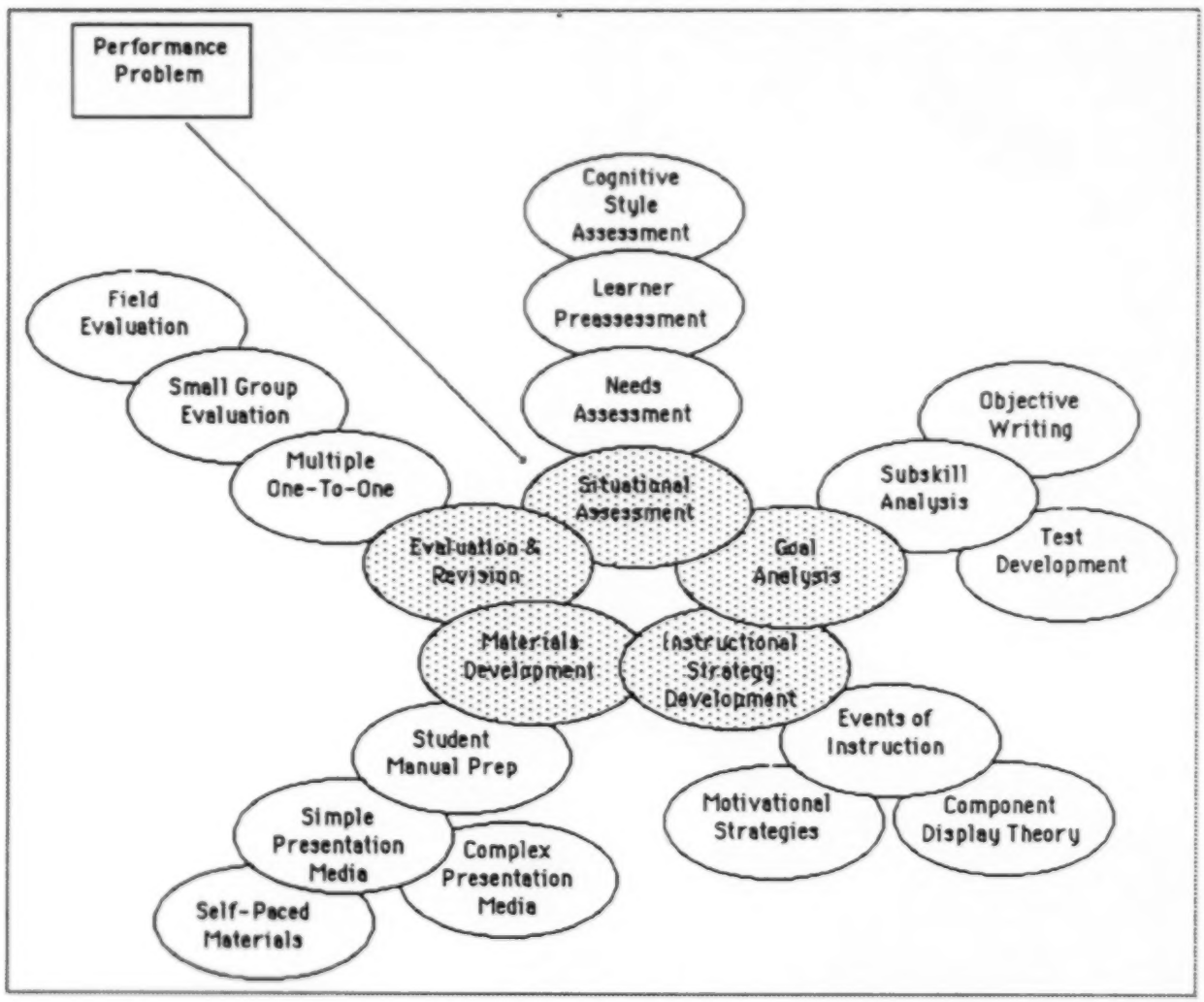
Figure 2. Simple layer of ID activities



Background (cont.)

In the second example, additional time, resources, and support were available, allowing additional activities to be included (see Figure 3 below).

Figure 3. Multiple layers of ID activities



Is there evidence to support the need for a layered approach? Do practitioners skip ID/D activities? If so, what are the factors which influence the decision to skip an activity? This paper provides a preliminary answer to these questions.

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Methodology

Subjects

The subjects in the study consisted of 73 practicing instructional designers in two states. The subjects' experience in training ranged from a few months to over 25 years.

The subject's job responsibilities covered many facets of training and development, including course writing, project management, and stand-up training. For some, training and development was their career; for others, their assignment to training was temporary.

Approximately 40% of the subjects (N=30) were from the same training and development group within a large organization. The other subjects (N=43) were from a wide variety of contexts (e.g., business, government).

Instrument

An "Instructional Design Activities Survey" was constructed for the study. The survey was comprised of two parts. The first part asked the subjects to rank the frequency with which they completed each of eleven design activities on instructional design projects. The design activities list was a composite of several common ID/D models (e.g., Dick & Carey, 1985). The eleven design activities were:

- conduct a needs assessment
- determine if need can be solved by training
- write learning objectives
- conduct task analyses
- identify the types of learning outcomes (concepts, prob. solving)
- assess trainee's entry skills and characteristics
- develop test items
- select instructional strategies for training
- select media formats for the training
- pilot test instruction before completion
- do a follow-up evaluation of the training

Methodology (cont.)

Instrument (cont.)

Frequency was expressed in terms of *Never, Occasionally, Usually,* and *Always*. The instrument also provided space for the participants to add an additional design activity not listed on the survey.

The second part of the survey asked the subjects to pick one or more reasons to explain why each design activity might be excluded from some projects. The six options were:

- lack expertise
- client won't support
- decision already made
- considered unnecessary
- not enough time
- not enough money

Space was also provided for the subjects to add an additional reason why a design activity was excluded from some projects.

Data Collection

Two data collection procedures were used. The survey was distributed to the intact training and development group during a workshop being conducted for these individuals. (Note: The workshop did not deal with instructional design issues). For the remaining subjects, the instrument was distributed by mail using a mailing list provided by a local professional association. Approximately 47% of the mail-out surveys were completed and returned.

Methodology (cont.)

Analysis

As mentioned earlier, approximately 40% of the subjects were from the same training and development organization; the remaining subjects were from a variety of contexts. An analysis (Mann-Whitney U) was performed on an item-by-item basis to determine if the data from the in-tact group could be combined with the data from the remaining subjects. Since no statistically significant differences were found between the two groups' responses (the level of significance hovered around .49 on each item), the data were aggregated.

An early hypothesis was that experience would play a role in designers' decision to include ID/D activities. To test this hypothesis, the responses were grouped according to years of experience and analyzed (Mann-Whitney U) to determine if years of experience was related to the decision to complete an activity.

Frequencies and percentages were computed for the level of use reported for each design activity. Frequencies were also computed for the reasons why an activity was excluded from some design projects. The frequencies and percentages were examined for general trends.

Very few subjects exercised the option of adding an additional design activity or an additional reason for excluding a design activity. Consequently, these data were not included in the analysis.

Findings

ID/D Activity Completion

The most frequently completed ID/D activities were "write learning objectives," "select instructional strategies," and "select media formats." The least frequently completed activities were "pilot test" and "assess trainee's entry skills."

To gain a broader perspective on the likelihood an activity would be completed, two composite values were calculated. The "Probably Will" value is the sum of the "Always" and "Usually" percentages; the "Probably Won't" value is the sum of the "Occasionally" and "Never" percentages. Table 2 below summarizes these percentages. Percentages warranting special attention are underlined.

Note. The numbers in the cells represent the percentage of the total number of subjects who marked a particular category. The percentages will not total to 100% since some subjects did not respond to every item.

Table 2. Percentages for Design Activity Completion

	How often an activity is completed					
ID/D Activity	Always	Usually	Probably Will	Occas'ly	Never	Probably Won't
Conduct a needs assessment	29	34	63	23	8	31
Determine if need can be solved by training	36	34	70	21	8	29
Write learning objectives	82	12	94	4	1	5
Conduct task analyses	30	36	66	23	8	31
Identify the types of learning outcomes	36	38	74	16	10	26
Assess trainee's entry skills and characteristics	27	27	54	34	10	44
Develop test items	59	23	82	11	4	15
Select instructional strategies for training	50	35	85	10	3	13
Select media formats for the training	52	34	86	8	3	11
Pilot test instruction before competition	33	16	49	33	18	51
Do a follow-up evaluation of the training	38	34	75	22	5	27

Findings (cont.)

Why an Activity Is Excluded

The reasons given for why an activity was excluded from some projects ranged from "decision already made" (selected 130 times) to "lack expertise" (selected 22 times). Somewhat surprisingly, "not enough money" was not identified as a common reason for excluding an activity. Table 3 summarizes these findings on an activity-by-activity basis. Frequencies which warrant special attention are underlined.

Note. The numbers in the cells represent the number of times a particular reason was selected. Subjects were asked to indicate all reasons that applied to a particular activity.

Table 3. Reasons for Excluding ID/D Activity

	Reasons an activity is excluded						
ID/D Activity	Lack Expertise	Client Won't Support	Decision Already Made	Consid. Unneces.	Not Enough Time	Not Enough Money	Total (across reasons)
Conduct a needs assessment	0	6	31	15	13	3	68
Determine if need can be solved by training	3	2	29	5	6	1	46
Write learning objectives	2	0	2	5	5	3	17
Conduct task analyses	5	5	12	17	14	3	56
Identify the types of learning outcomes	7	7	13	12	9	2	50
Assess trainee's entry skills and characteristics	0	6	11	16	8	4	45
Develop test items	0	2	3	12	7	3	27
Select instructional strategies for training	3	1	12	1	9	4	30
Select media formats for the training	0	2	11	2	9	9	33
Pilot test instruction before competition	1	9	4	15	32	14	75
Do a follow-up evaluation of the training	1	8	2	9	9	7	36
Total (across activities)	22	48	130	109	121	53	---

Discussion

Selective Completion of ID/D Activities

The results of this preliminary study confirm that practicing instructional designers do not complete all design activities for all projects. While not particularly surprising, this finding does raise questions about the relationship between ID/D models and ID/D practice. The Layers of Necessity Model is being developed in an attempt to improve this relationship.

However, several other trends can be seen in the data. These trends, and the ensuing questions, are discussed below.

Objectives without Task Analysis

The first trend is the relationship between certain ID/D activities. As noted above, the vast majority of subjects reported they always or usually wrote learning objectives. However, nearly one-third (31%) of the subjects indicated they were not likely to conduct a task analysis, raising questions about how objectives are derived. When coupled with the finding that the most frequently given reason for not conducting a task analysis was "considered unnecessary," questions about the rationality of ID/D practice begin to arise.

Quality Control & Pilot Testing

A second trend is in the area of quality control. The sole reason for pilot testing instruction is to test the quality of the instruction prior to full-scale implementation. Pilot testing is considered necessary because it is unlikely that "first draft instruction" will be without problems. However, in spite of the importance of pilot testing, only half of the subjects indicated they pilot tested instruction on a regular basis. "Note enough time" is the overwhelming reason given for not including this activity in a project. Does pilot testing takes too long, or do the other design activities take too much time?

Discussion (cont.)

Trainee Analysis

A third trend warranting discussion involves assessing trainee's entry skills and characteristics. Given the importance of prior knowledge (i.e., entry skills) and the popularity of "learning style" and "adult learner" constructs, one might expect some form of preassessment to be a common occurrence. Such is not the case; nearly half of the subjects indicated they were not likely to assess entry skills or characteristics. And the most frequently given reason for excluding this activity: "considered unnecessary."

Barriers to ID/D Activities

The final trend to be discussed here is not about any particular ID/D activity but rather about the reasons given for excluding an activity. As expected, "Not enough time" was identified as a common reason.

However, "decision already made" and "considered unnecessary" was also cited as common reasons. In terms of the "decision already made" reason, several questions immediately surface: "Who is making these decisions?" "How are they being made?" "Are they actually being made or are 'default values' used?" In terms of the "considered unnecessary" reason, are certain activities inappropriate for some project, or are they considered to add little value to the process?

Conclusion

This study was undertaken in an attempt to provide support for a Layers of Necessity type of approach to instructional design. The results did provide such support; ID/D activities are not always carried out and time is a frequently cited reason for excluding certain activities, especially pilot testing instruction.

Somewhat surprisingly, the lack of money was not identified as a major barrier. While resource constraints will continue to be accounted for, future work on the Layers of Necessity Model will concentrate on identifying way to streamline the course development process. A means of "cutting corners while controlling risk" in ID/D project needs to be developed.

Unfortunately, the implications of the study do not stop here. While preliminary and tentative, the results raise serious questions about the relationship between instructional design and development as it generally appears in the literature and as it is practiced in real life.

- Perhaps the survey was flawed.
- Perhaps the subjects were atypical.
- Perhaps the interpretation was too sweeping.
- Perhaps additional, better, and different research into the practice of instructional design and development is needed.
- Perhaps we need to shift our attention from better instructional design models to better instructional design practice.

Whatever the case, we need to end the "disconnect" between instructional design models and the realities these models must be able to address.

References

Dick, W. & Carey, L. (1985). The systematic design of instruction. (2nd ed.). Glenview, IL.: Scott, Foresman & Co.

Rogoff, R.L. (1984). The training wheel: A simple model for instructional design. The Magazine of Human Resources Development, 21(4), 63-64.

Rosenberg, M. (1991). Building bridges to business: Opportunities and challenges for academia. Address at the Annual Meeting of the Association for Educational Communications and Technology, Orlando, Florida.

Tessmer, M. & Wedman, J.F. (1990). A layers-of-necessity instructional development model. Educational Technology Research and Development, 38(2), 77-85.

Tessmer, M. & Wedman, J.F. (1992). Decision-making factors and principles for selecting a layer of instructional development activities. Performance & Instruction, 31(4), 1-6.

Wedman, J.F. & Tessmer, M. (1990). The layers of necessity ID model. Performance & Instruction, 29(4), 1-7.

Wedman, J.F. & Tessmer, M. (1991). Adapting instructional design to project circumstance: The layers of necessity model. Educational Technology, 31(7), 48-52.

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Instructional Design Activities Survey

Dear Fellow NSPI Member:

For a number of years there has been a continuing debate on the degree to which instructional design models are used in practice. This survey, however simple, is our attempt to determine if and how performance technologists use instructional design activities in their design projects.

We would like you to tell us which design activities you omit from projects in which they could be employed, and why. Please confine your answers to projects in which you have participated. The answers to this survey will be used to tell technologists how and why ID activities are used in practice. We hope to present the results at an upcoming NSPI meeting and in a forthcoming Performance and Instruction article.

Please take a few minutes to complete this survey and return it to us in the enclosed envelope by November 27. All survey responses will be confidential.

Instructions

PLEASE RETURN THIS SURVEY IN THE ENCLOSED POSTAGE-PAID ENVELOPE. If you have any questions, please feel free to call Marty Tessmer, University of Colorado at Denver (303) 556-4362. Thank you for your help in this study.

Job Title

Your full job title is:

_____

Job Duties

Please describe your primary job duties.

_____

_____

_____

_____

_____

Your Position (Check One)

____ Independent Training Consultant

____ Member of an Independent Training Organization

____ Member of a Training Dept. within a larger Organization

____ Other: _____

_____

Experience

How many years have you had training-related duties?

_____ Years

If you would be available for a short followup phone call, please provide:

Name _____ **Phone #** _____

(OVER)

		How Often Do You Do This On ID Projects? (Check One Only)				Why is This Activity Excluded from Some Projects? (Check all that apply)						
		Never	Occasionally	Usually	Always	Lack Expertise	Client Won't Support	Decision Already Made	Considered Unnecessary	Not Enough Time	Not Enough Money	Other:
	(EXAMPLE):	o	o	✓	o	☐	☑	☐	☐	☑	☐	Team disagreements about how to do it.
1.	We conduct a needs assessment.	o	o	o	o	☐	☐	☐	☐	☐	☐	
2.	We determine if need can be solved by training.	o	o	o	o	☐	☐	☐	☐	☐	☐	
3.	We write learning objectives.	o	o	o	o	☐	☐	☐	☐	☐	☐	
4.	We conduct task analyses.	o	o	o	o	☐	☐	☐	☐	☐	☐	
5.	We identify the types of learning outcomes (concepts, prob. solving)	o	o	o	o	☐	☐	☐	☐	☐	☐	
6.	We assess trainee's entry skills and characteristics.	o	o	o	o	☐	☐	☐	☐	☐	☐	
7.	We develop test items.	o	o	o	o	☐	☐	☐	☐	☐	☐	
8.	We select instructional strategies for training.	o	o	o	o	☐	☐	☐	☐	☐	☐	
9.	We select media formats for the training.	o	o	o	o	☐	☐	☐	☐	☐	☐	
10.	We pilot test instruction before completion.	o	o	o	o	☐	☐	☐	☐	☐	☐	
11.	We do a follow up evaluation of the training.	o	o	o	o	☐	☐	☐	☐	☐	☐	
12.	Other:_____					☐	☐	☐	☐	☐	☐	

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